

Renewable Energy Question 15: *What has Michigan's experience been with siting renewable and non-renewable energy generation to date? If siting becomes easier or more difficult, how will that impact both cost and the overall renewable capacity of Michigan?*

Executive Summary

1. As the largest holder of wind energy land development rights in Michigan, DTE Energy has successfully received the required permits for nearly 350 MW of wind generation.
 - This was only possible through a constructive and collaborative relationship with the communities in which our wind assets reside.
 - If a zoning authority were to deviate meaningfully from established industry-wide permitting standards the cost implications would be significant and could potentially lead to the cancellation of the project, as happened in Benzie/Manistee,¹ Lenawee and Mason counties.²
 - Community acceptance, or lack thereof, is a critical driver to any successful renewable energy project, but no more so than on a wind development.
 2. DTE Energy also has considerable expertise in siting solar photovoltaic (PV) generation projects through its SolarCurrents customer-owned and utility-owned programs.
 - The Company has seen meaningful opposition to utility-scale solar projects, even in municipalities with reputations for being welcoming to green energy.
 - Furthermore, the Company has observed that many small-scale distributed generation projects have been sited sub-optimally (for example, on rooftops not facing due south), and this directly translates into a materially lower average system performance than the Company's larger-scale solar projects.
 - To the extent that net metering or feed-in-tariff type incentives make siting of distributed generation more attractive, the likelihood increases that a greater share of projects in the state will be suboptimally sited, thus increasing cost and the amount of solar capacity that must be constructed to attain the same output.
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¹ <http://ipr.interlochen.org/ipr-news-features/episode/17684>

² <http://www.protectwithpower.org/2010/04/power-posts/comment-page-1/>

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1. As the largest holder of wind energy land development rights in Michigan, DTE Energy has successfully received the required permits for nearly 350 MW of wind generation.

Key Drivers for Wind Energy Siting Success are Community Support and Favorable Zoning

Community support and favorable local zoning have been key drivers for DTE's success siting wind energy projects. Community support for wind energy in project areas is vital because a wind park is by necessity spread out, and as such, is typically viewed as being located in or around a community. This is unlike more traditional sources of electric generation (e.g., coal or gas plants) where the project area is more defined and condensed. Local residents must be comfortable with wind energy projects, since the turbines themselves are "neighbors" to some homes and businesses. While an entire community may not embrace wind projects, it is essential that the majority of residents support the project. Support is typically the result of the economic boost that wind projects provide to individual land owners, workers, businesses and communities (schools, libraries, roads, etc.), and of the environmental benefits that a clean, renewable energy source such as wind offers.

Local zoning ordinances usually reflect a community's appetite for wind energy projects. Communities hosting successful wind energy projects typically have established zoning that is protective of communities and the environment while enabling economically viable wind energy projects. Thoughtful wind energy zoning establishes setbacks that account for community safety (minimum allowable distances from roads and homes), environmental protection (minimum allowable distances from wetlands, streams, shorelines or other natural habitats), and community goodwill (minimum distances established based on modeling for sound and visual aspects of wind projects). These requirements are established using sound science, yet remain sensitive to a project's cost effectiveness.

Cost Effectiveness Correlates with Ease of Siting

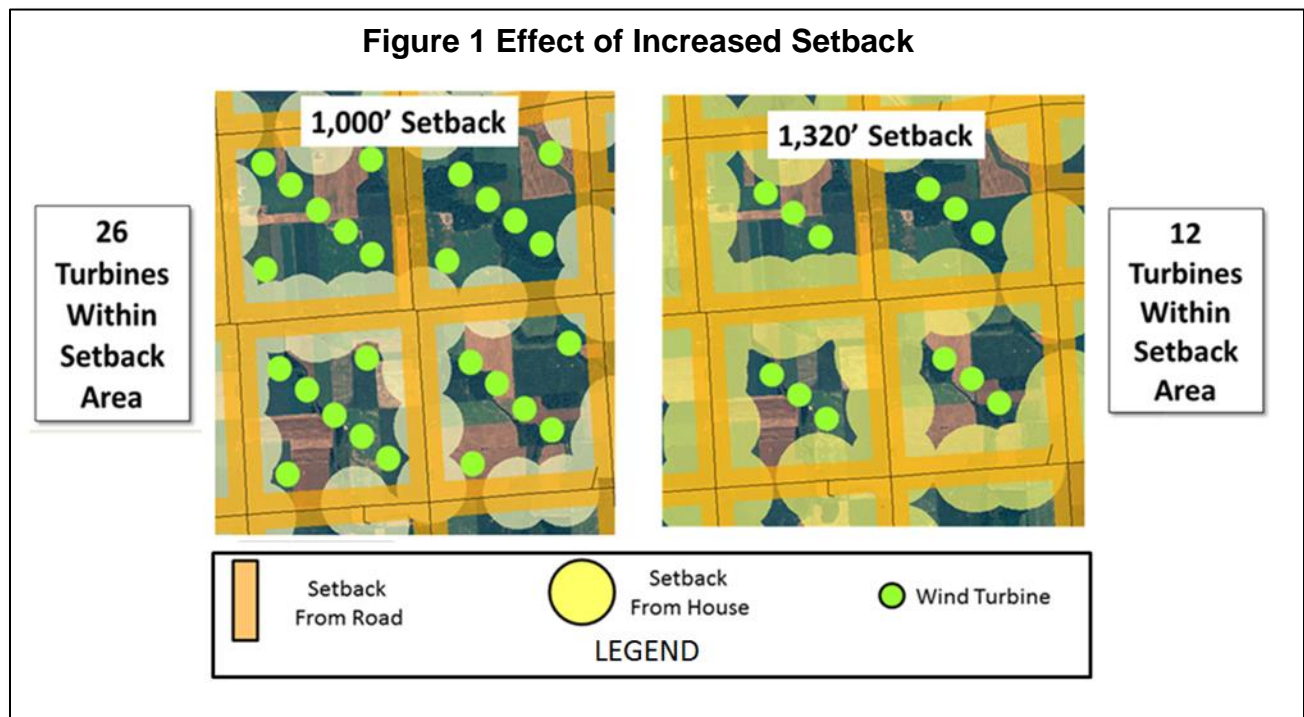
The cost effectiveness of wind energy projects correlates directly with the ease of siting. Areas where communities support wind, and have developed practical zoning, will more likely yield cost effective wind energy projects. Cost effectiveness of wind projects goes down in communities that resist wind development, particularly if zoning ordinances reflect that resistance. In the extreme, community resistance or unfavorable zoning can cause wind developers to leave an area, as discussed in more detail below. Many wind developers have indicated that attempting to develop a project in a community hostile to wind is futile because all development work, and resulting turbine lay outs will require very costly design, engineering, construction, and operation. Further, developers, and

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then owner/operators of wind parks in such areas, find untenable a relationship with their host community that is always contentious.

Wind Energy Capacity Correlates with Ease of Siting

As discussed in Renewable Energy Question 8, wind is the most abundant renewable energy resource in Michigan. Within the state, the Thumb region offers the most abundant wind resource. While community support and favorable zoning would allow for optimal development of wind energy in this region, negative changes in these key drivers would reduce the number of turbines able to be sited in the Thumb (see Figure 1 for an illustration).



Consequently, wind development in regions of Michigan with less favorable wind conditions would be required. Wind turbine siting in regions with less wind resource results in a proportional decrease in wind generation potential. Ultimately this decreases output of renewable energy, making it more expensive to meet the state's 10% renewable energy portfolio standard. That is, more turbines have to be constructed in areas with moderate wind resources to achieve the same output that can be achieved with fewer turbines in the wind-rich Thumb region. This has a direct cost.

There are regions in Michigan in addition to the Thumb that offer an excellent wind resource which could contribute strongly to the state's wind energy generation. Wind resources exist along the Lake Michigan shoreline and even off-shore. However,

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Michigan projects proposed near shorelines (or offshore) have thus far met stiff resistance from local homeowners and businesses. This indicates that wind resource alone is not a guarantee that additional wind energy generation capacity will be available to power Michigan's future.

Examples of Strong Community Support that Resulted in Wind Development

Gratiot County in Central Michigan worked with a wind developer across four townships to educate the community about the multiple benefits of wind energy. This effort required years of planning with extensive public involvement. Gratiot County understood the importance of community support, beginning their effort by first confirming that the community would entertain a wind energy project. The community's overwhelming support has resulted in Gratiot County hosting 133 operating wind turbines.

Huron County faced referendum votes for two DTE projects in 2010. Recognizing there was majority support for wind energy in Huron County, DTE Energy was encouraged when a grass roots effort, Citizens for Wind Energy (CWE), was formed with the mission to educate members of the community of the benefits of wind energy and encourage wind energy supporters to vote in favor of two projects proposed by DTE. The outcome of the referendum vote was a 60% favorable vote, and these communities now host 49 turbines.

Examples of Favorable Zoning that Resulted in Wind Development

Gratiot County recognized the value of favorable zoning for a wind developer. They achieved project success by ensuring all townships involved in their wind development planning were aligned on zoning requirements. Zoning ordinance details such as setback distances and other requirements were consistent across four townships. Consistent zoning across jurisdictions makes a wind developer's job easier in terms of siting wind turbines, and demonstrating compliance at permitting time.

Huron County developed a workable wind energy zoning ordinance early on in Michigan. After some initial experience implementing this ordinance, the county revised the ordinance to increase distances from non-participating residents. While this change increased the challenge for wind developers by reducing the number of turbines possible per square mile, it still allowed cost effective projects since increased turbine heights allowed capture of better winds, offsetting the decrease in turbines. In this case, county leaders balanced community concerns with the knowledge that taller turbines would still allow viable wind energy project development.

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Examples of Lack of Community Support that Resulted in Cancelled Projects

Benzie and Manistee Counties in the northwest portion of Michigan's Lower Peninsula were approached by Duke Energy regarding a proposal for a 100 turbine wind energy project. Though this project appeared to have much to offer its host communities, Duke Energy eventually withdrew from this community for business reasons, but apparently also because of the stiff opposition they faced from community groups, local governments in the form of moratoriums, and a large contingent of lakeside homeowners in the area. In this case, community opposition halted a project.

Mason County was approached by Offshore Wind Energy Developer Scandia regarding a 500 MW offshore wind energy project. The project was rejected by Mason County leaders due to a lack of information provided by Scandia. Scandia's initial request was to gain approval to conduct several years of studies to evaluate the possibility of such a project. The project was also opposed by a well-organized group of lakeshore home owners. The result was Scandia's withdrawal of the proposed project.

Examples of Unfavorable Zoning that Prevented Wind Development

Lake Township in Huron County is located in the northwest corner of the Thumb. While not against wind energy on the whole, this township includes some leaders and residents who strongly oppose wind energy. In one case, township leaders proposed a draft wind energy ordinance that allowed effectively less than 10 acres of land for commercial wind turbine siting. DTE has found that, on average, a single turbine can require up to 300 acres for effective siting. Clearly, this draft ordinance would have allowed no commercial wind development in this township. To date, no development has occurred in this community beyond acquiring wind energy land development rights.

Riga Township in Lenawee County passed tougher zoning regulations that increased the required distance between wind turbines and residents' homes and mandated lower noise levels than what was previously permitted. Unfortunately, the ordinance changes were extreme to the extent that an economically viable wind project was no longer possible. As a result, wind developers working in that community took their project elsewhere.

2. DTE Energy also has considerable expertise in siting solar photovoltaic (PV) generation projects through its SolarCurrents customer-owned and utility-owned programs.

The Company has successfully sited fourteen projects within the scope of the utility-owned SolarCurrents pilot program, and expects to double that number by 2015.

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Zoning considerations play an important role in site selection, as a growing number of communities are adopting solar-specific ordinances, such as those prohibiting the siting of solar arrays in locations that are visible from major roadways.

DTE Energy has also seen meaningful opposition to solar projects, even in municipalities with reputations for being welcoming to green energy. Such challenges require experience and expertise to navigate, and increase the time and cost associated with project development.

DTE has also incentivized the construction of about 600 residential and small commercial PV systems via its customer-owned SolarCurrents program, and as such, has detailed information on the siting and performance of these projects. The Company has observed that many of these projects have been sited sub-optimally (for example, on rooftops not facing due south), and this directly translates into a materially lower system performance than that from the Company's portfolio of projects.

To the extent that net metering or feed-in-tariff type incentives make siting of distributed generation more attractive, the likelihood increases that a greater share of projects in the state will be sub-optimally sited, thus increasing cost and the amount of solar capacity that must be constructed to attain the same output.